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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/825,212

04/16/2004

Stephen Alan Allpress

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EXAMINER

BAKER, STEPHEN M

ART UNIT

PAPER NUMBER

2112

MAIL DATE

DELIVERY MODE

05/10/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/825,212

Applicant(s)

ALLPRESS, STEPHEN ALAN

Examiner

Stephen M. Baker

Art Unit

2112

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2007.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Objections

1. Claims 1 and 13 are objected to because of the following informalities:

In claims 1 and 13, "maximum" added by amendment adds nothing and is thus unnecessary and should be deleted. The so-called "maximum number of iterations" is always executed, and thus would accurately be described as a "required number of iterations."

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. Claims 1-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the recited sequence of operations is now made incorrect by the amendment. Lines 4-7 apparently should read as:

determining whether a pre-determined decoder termination threshold metric has been met but only after a pre-determined number of decoder iterations;

identifying frames for use in further processing, if the threshold metric has been met ~~but only after a pre-determined maximum number of decoder iterations;~~

Regarding claim 13, the "maximum iteration processor" added by amendment as a "processor" separate from the "threshold metric processor" apparently has no basis shown or otherwise disclosed. Lines 4-8 apparently should read as:

A threshold metric processor for determining whether a pre-determined decoder termination threshold metric has been met, but only after a pre-determined number of decoder iterations, and for identifying frames for use in further processing if the threshold metric has been met;

~~A maximum iteration processor for identifying frames for use in further processing, if the threshold metric has been met but only after a pre-determined maximum number of decoder iterations;~~

Claim Rejections - 35 USC § 102

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1, 6-11, 13, 18-23 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,292,918 to Sindhushayana *et al* (hereafter "Sindhushayana").

Sindhushayana discloses arrangements and an algorithm (Fig. 2) for terminating decoding iterations in a turbo decoder of a serial or parallel turbo code.

Sindhushayana's iteration termination arrangements include performing, after iteration $N=TR+1$, (" $N>TR$ "), determining of a minimum absolute probability value for all the bits in the block being decoded (" $MIN|L|>Pr$ "), thereby "determining whether a pre-determined decoder termination threshold metric has been met ... but only after a pre-determined maximum number of decoder iterations" with a "threshold metric processor" (88). This step is followed by a CRC check ("CRC OK") with a "cyclic redundancy check processor" (83) when the minimum absolute probability value for all the bits in the block being decoded is above a threshold value (column 3, lines 50-58), thereby "determining whether a decoder termination test based on a cyclic redundancy check code has been

passed.” Iterations then terminate (“END”) “only if the cyclic redundancy check test has been passed,” requiring a “decoder termination means” in Sindhushayana’s decoder.

Regarding claims 6 and 18, in other embodiments, alternatives to the minimum absolute probability mentioned by Sindhushayana are the average absolute probability, the median absolute probability, and a next-to-minimum absolute probability (column 4, lines 4-12). The probability values in turbo decoding are represented with log-likelihood ratio values.

Regarding claim 25, Sindhushayana’s decoding may be implemented by programmed DSPs (column 9, line 28), requiring a “computer program product comprising program code means.”

Claim Rejections - 35 USC § 103

5. Claims 2-5, 12, 14-17 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sindhushayana.

Regarding claims 2-5 and 14-17, although Sindhushayana does not specifically mention substituting the threshold test based on the minimum absolute probability value with a threshold test based on cross-entropy, on sign change ratio, on sign difference ratio, or on some other hard-decision measure, Sindhushayana does suggest that any other measures indicative of the progress of turbo decoding may be used in place of the measures mentioned by Sindhushayana (col. 4, lines 4+). Official Notice is taken that cross-entropy, sign change ratio, sign difference ratio, and other hard-decision based measures were well-known measures indicative of the progress of turbo decoding at the

time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to substitute cross-entropy, sign change ratio, sign difference ratio, or some other hard-decision measure in place of Sindhushayana's progress measures. Such substitutions would have been obvious because cross-entropy, sign change ratio, sign difference ratio, and other hard-decision based measures were already well-known measures indicative of the progress of turbo decoding.

Regarding claims 12 and 24, Sindhushayana does not specify that the cellular wireless system is a "W-CDMA" cellular wireless system. Official Notice is taken that W-CDMA was a well-known cellular wireless system standard at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to apply Sindhushayana's turbo code decoding arrangements to turbo code decoding in a W-CDMA cellular wireless system. Such an application would have been obvious because W-CDMA was already a well-known cellular wireless system standard.

Response to Arguments

6. Applicant's arguments filed 30 January 2007 have been fully considered but they are not persuasive.

The examiner does not recognize any significant relevance to the Sindhushayana reference or the standing rejections based on the Sindhushayana reference.

Regarding the rejection made under 35 USC 103, applicant does not disagree with the examiner's characterization of each of the various recited substituted decoder progress measures as being "well-known." Applicant furthermore makes no comment on the motivation for the substitutions (Sindhushayana col. 4, lines 4+). Accordingly, it is apparent that applicant has made no comment that is actually relevant to the rejection.

Conclusion

7. Applicant's amendment necessitated the new ground of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. Baker whose telephone number is (571)

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272-3814. The examiner can normally be reached on Monday-Friday (11:00 AM - 7:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jacques H. Louis-Jacques can be reached on (571) 272-6962. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Stephen M. Baker
Primary Examiner
Art Unit 2112

smb